WE CLAIM:

1.   A method of fabricating a Magnetic Random Access Memory (MRAM) comprising:

forming an array of magneto-resistive bits such that the magneto-resistive bits are arranged in a plurality of rows;

forming a plurality of word lines;

forming a plurality of digital lines in a zig-zag pattern such that a digital line comprises vertical segments and horizontal segments, where a vertical segment of the digital line is substantially parallel to a corresponding word line, where a horizontal segment electrically connects adjacent vertical segments such that a digital line current common to the adjacent vertical segments flows in substantially opposite directions in the adjacent vertical segments; and

forming a plurality of sense lines, where a sense line electrically connects magneto-resistive bits of a row.

2.   The method as defined in Claim 1, wherein forming the plurality of word lines further comprises forming the word lines such that a word line is substantially parallel to another word line.

3.   The method as defined in Claim 1, further comprising forming the array of magneto-resistive bits such that a major axis of a magneto-resistive bit is substantially perpendicular to a corresponding word line.

4.   The method as defined in Claim 1, wherein forming the plurality of digital lines further comprises forming the horizontal segments such that a major axis of a horizontal segment is substantially perpendicular to a major axis of a word line.

5.   A method of storing data in a Magnetic Random Access Memory (MRAM) comprising:

receiving an address corresponding to a memory location of the MRAM, where the MRAM includes a plurality of magneto-resistive bits in an array, a plurality of word lines, and a plurality of digital lines, where the magneto-resistive bits are further arranged in a plurality of rows, and where the digital lines are arranged in a zig-zag pattern such that a digital line comprises vertical segments and horizontal segments, where a vertical segment of the digital line is substantially parallel to a

corresponding word line, where a horizontal segment electrically connects adjacent vertical segments such that a digital line current common to the adjacent vertical segments flows in opposite directions in the adjacent vertical segments;

receiving data to be stored in the MRAM;

receiving a control signal that indicates a data write operation;

relating the address to a word line and a digital line corresponding to a magneto-resistive bit in the array; and

storing a first logical state by activating word line current in the selected word line and by activating digital line current in the selected digital line in response to the control signal.

6.   The method as defined in Claim 5, further comprising storing a second logical state by activating word line current in the selected word line and by activating digital line current in the selected digital line in response to the control signal, where a direction of flow of current used for the second logical state is opposite to than a direction for the first logical state.

7.   The method as defined in Claim 5, further comprising:

selecting a sense line corresponding to the selected magneto-resistive bit; and

activating current in the selected sense line, where the sense line current flows in a first direction along the sense line to store the first logical state, and where the sense line current flows in a second direction opposite to the first direction to store a second logical state.

8.   The method as defined in Claim 5, wherein the word lines are further configured such that a word line is substantially parallel to another word line.

9.   The method as defined in Claim 5, wherein the array of magneto-resistive bits is further configured such that a major axis of a magneto-resistive bit is substantially perpendicular to a corresponding word line.

10.   The method as defined in Claim 5, wherein the horizontal segments are further configured such that a major axis of a horizontal segment is substantially perpendicular to a major axis of a word line.

11.   A method of retrieving data stored in a Magnetic Random Access Memory (MRAM) comprising:

receiving an address corresponding to a memory location of the MRAM, where the MRAM includes a plurality of magneto-resistive bits in an array, a plurality of word lines, and a plurality of digital lines, where the magneto-resistive bits are further arranged in a plurality of rows, and where the digital lines are arranged in a zig-zag pattern such that a digital line comprises vertical segments and horizontal segments, where a vertical segment of the digital line is substantially parallel to a corresponding word line, where a horizontal segment electrically connects adjacent vertical segments such that a digital line current common to the adjacent vertical segments flows in opposite directions in the adjacent vertical segments;

receiving a control signal that indicates a data read operation;

relating the address to a word line, a digital line, and a sense line corresponding to a magneto-resistive bit;

activating current to pass through the selected word line in a first word line direction;

activating current to pass through the selected digital line in a first digital line direction;

sensing a first resistance of the sense line;

activating current to pass through the selected word line in a second word line direction;

activating current to pass through the selected digital line in a second digital line direction;

sensing a second resistance of the sense line; and

comparing the first resistance to the second resistance to retrieve the stored data.

12.   The method as defined in Claim 11, wherein the word lines are further configured such that a word line is substantially parallel to another word line.

13.   The method as defined in Claim 11, wherein the array of magneto-resistive bits is further configured such that a major axis of a magneto-resistive bit is substantially perpendicular to a corresponding word line.

14.   The method as defined in Claim 11, wherein the horizontal segments are further configured such that a major axis of a horizontal segment is substantially perpendicular to a major axis of a word line.